



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/030,586

05/24/2002

Hans Lander

10191/2175

6461

26646

7590

03/06/2008

KENYON & KENYON LLP  
ONE BROADWAY  
NEW YORK, NY 10004

EXAMINER

HWU, DAVIS D

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

03/06/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/030,586	<b>Applicant(s)</b> LANDER ET AL.	
	<b>Examiner</b> Davis D. Hwu	<b>Art Unit</b> 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16 and 19-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16 and 19-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**Response to Amendment**

1. Applicant's amendment and remarks of January 14, 2008 have been entered fully considered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

3. Claims 16 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. in view of Pontoppidan.

Shen et al. disclose a fuel injector comprising a fuel inlet, a movable valve-closure member 14, a fixed valve seat element 32 to cooperate with the valve-closure member as recited, and a downstream valve end including an outlet component 34 and a fuel outlet wherein the fuel outlet includes at least one discharge orifice 48 of the outlet component, the outlet component 34 including the at least one discharge orifice 48 is configured to be flat and disk-shaped and is arranged directly downstream of the fixed valve seat element and is permanently joined to the fixed valve seat element, the discharge orifice 48 being inclined at an angle relative to the longitudinal axis of the valve, wherein the discharge orifice ends in an outlet area configured as a convexly arched spray discharge region as recited. Shen et al. do not disclose a coating around the at least one discharge orifice as recited. Pontoppidan teaches a fuel injector comprising a movable valve-closure member 9 and a fixed valve seat element to cooperate with the valve-closure member to open and close a valve in which the seat has an outlet that includes a coating around the discharge orifice including in an

immediate exterior of an outlet area of the discharge orifice to protect against scaling. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the device of Shen et al. by providing a coating at least one discharge orifice as taught by Pontoppidan to protect against scaling.

4. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. in view of Pontoppidan as applied to claim 16 above, and further in view of Fedorovich et al.

Fedorovich et al. teaches coating internal combustion engines with fluorosilicate to improve heat resistance of the various surfaces of the engines. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the device of Shen et al. and Pontoppidan by providing a coating comprising fluorosilicate as taught by Fedorovich et al. in order to provide heat resistance also. The actual coating area would have been a matter of design choice depending on the required coverage area and the method of spraying or dipping as recited in claim 24 would have been a matter of production preference since both methods are known in the art.

5. Claims 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. in view of Pontoppidan as applied to claim 16 above, and further in view of Reiter and Wakeman.

Shen et al. also discloses a valve guide 30. Reiter teaches a fuel injector comprising a seat 29, a swirl element 28 upstream of the seat, and a guide 27 to guide a movable valve closure member 19. It would have been obvious to one having ordinary skill in the

Art Unit: 3752

art at the time the invention was made to have modified the device of Shen et al. and Pontoppidan by providing a swirl element as recited since Reiter has already taught a fuel injector with such arrangements. The method of producing the swirl element as recited in claim 29 would have been a matter of manufacturing choice. Wakeman teaches a swirl element that includes an inner swirl chamber and a plurality of swirl ducts.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davis D. Hwu whose telephone number is 571-272-4904. The examiner can normally be reached on 8:00-4:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on 571-272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

/Davis D Hwu/  
Primary Examiner, Art Unit 3752